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DR. HABS, GERMAN MALARIOLOGIST

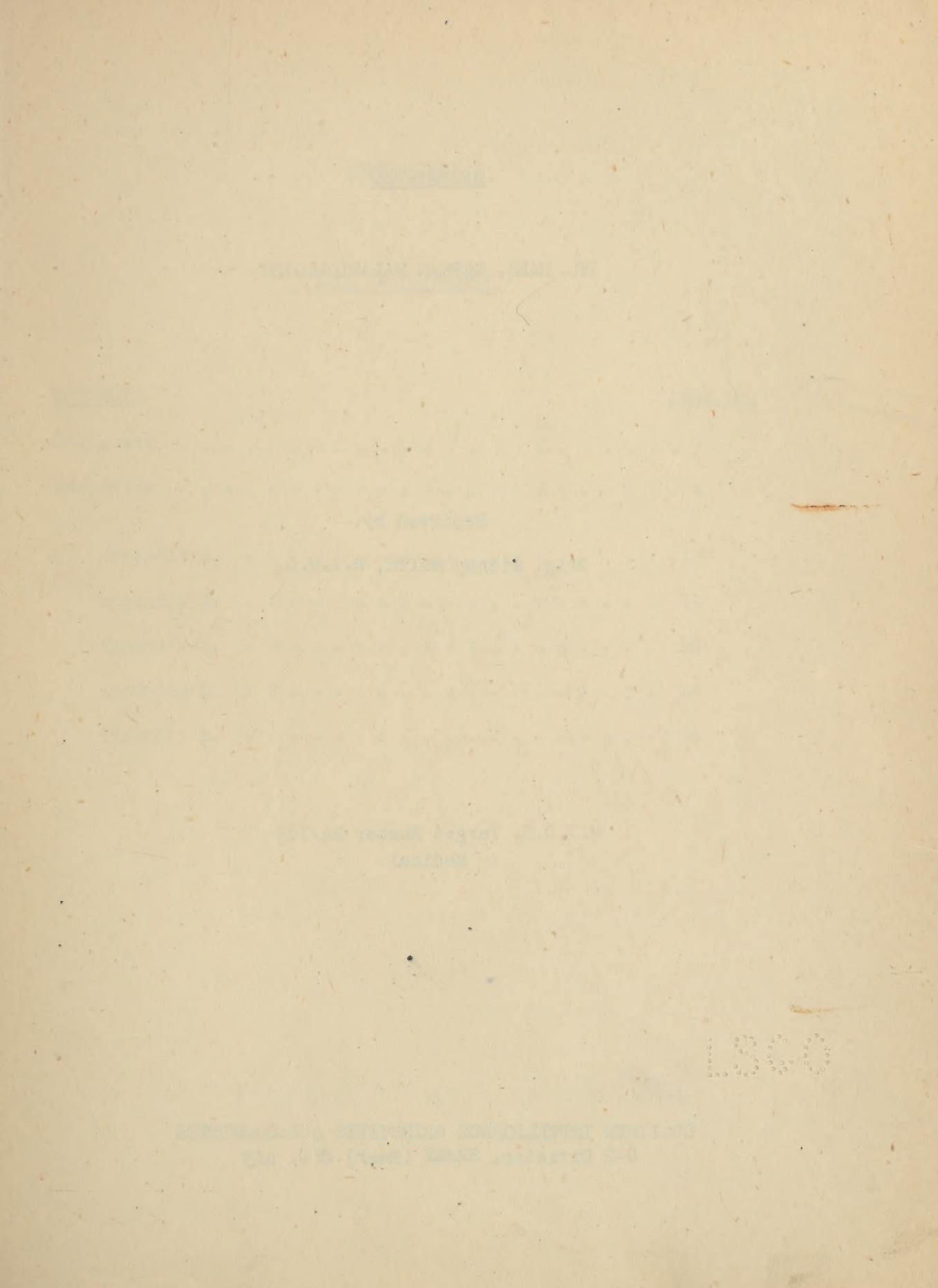


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COMBINED INTELLIGENCE OBJECTIVES
SUB-COMMITTEE

1945



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DR. HABS, GERMAN MALARIOLOGIST

Reported by,

Brig. Sidney SMITH, R.A.M.C.

C.I.O.S. Target Number 24/189
Medical

Allied Forces. Supreme Headquarters.

COMBINED INTELLIGENCE OBJECTIVES SUB-COMMITTEE
G-2 Division, SHAEF (Rear) AF O. 413

RESTRICTED

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Report on visit to Hamburg undertaken at request of
D.B.R., acting on information supplied by CIOs.

By

Brigadier Sidney Smith, Consultant Physician.

Southern and Eastern Commands.

I. ITINERARY.

4-6-45. Salisbury-London (by rail). Night in London.

5-6-45.

- a. Called at SHAEF (Rear) Hq, Secretariat (32 Bryanston Square) at 8.30 A.M.
- b. By bus to Hendon Aerodrome with 16 other investigators including S/Capt. Fairley, R.N., all bound for same destination.
- c. Hendon-Wunstorf aerodrome (near Hanover) by Dakota Aircraft (2½ hours).
Met at Wunstorf by Major Ignatieff (G(T) and CW Branch, 21 AG Main).
- d. Wunstorf-Luneburg (45 mins.) by air.
- e. Luneburg-Winsun (15 miles) by car.
At Winsun reported to Major Paterson (T. Force) who supplied transport and is arranging homeward journey.
Contacted Dr. Rice (U.S. civilian Medical investigator).
Contacted Capt. R.S. Krausen (CIOs Assessor).
- f. Winsun-Hamburg by car (20miles) with Dr. Rice.
- g. Billed during my stay in Hamburg at Streits Hotel (Officers' transit hospital) Binnen Alster.

6-6-45.

A.M.

- a. Interrogated (with Dr. Rice) Dr. Habs, now Director of Hygiene Institute of Hamburg, formerly malariologist to Wehrmacht in Greece. (Appendix A.)
- b. Visited Hamburg Tropical Institute (207 Hammerland Strasse).
Interrogated:-
 1. Professor Nauck, Director (Appendix B.)

2. Dr. Vogel, Helminthologist.

3. Dr. Kessering, Parasitologist, late of Shanghai.

P.M. c. Visited Eppendorfer Hospital (with Dr. Rice and S/Capt. Fairley, R.N.).
Interrogated Dr. R. Degkwitz (Appendix C).

7-6-45. Visited Hamburg Institute of Tropical Medicine, Langenhorn.

Interrogated:- (Appendix D)

1. Dr. W. Weise (Chief of Dept. Clin. Chemistry).
2. Dr. Mohr (Director of Clinical Medicine).
3. Dr. Lippelt (Chief of Bacteriology Dept.).
4. Dr. Weyer, Entomologist.
5. Dr. Nauck, reference recent researches on typhus.

8-6-45. Visited (with Dr. Rice and Prof. Nauck) Bernard Nocht Institute für Schiffs und Tropenkrankheiten, Hamburg.

Visited combined Flak tower, air raid shelter, hospital. Shewn over by Dr. Brutte (Director) and Dr. Nauck. (Appendix E).

9-6-45. a. Hamburg-Winsun-Luneburg (by car).

b. Luneburg-Brussels-Croydon (3½ hours flying) by air.

c. Croydon-Victoria by RAF bus.

d. Night in London

10-6-45. London-Salisbury (by rail).

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NARRATIVE.

Having received previously a short "briefing" from DER (Brig. F.A.E. Crew) as to my main "target" (interrogation of Dr. Habs, a German Malariaologist) I (in company with 16 other civil and military investigators covering many activities, mostly non-medical) proceeded by air from Hendon to Luneburg air-field (35 miles from Hamburg), an uneventful journey of about 3½ hours.

We flew at medium height (3,500-5,000 ft.) and the only evidence of war damage noted were the extensive inundations in Holland, the great destruction due to bombing at Osnabruk and its attendant air-field, the damaged and partially emptied Dortmund-Ems canal, and the numerous damaged or totally destroyed bridges over the various canals and rivers we flew over.

We made a brief halt at Wunstorf air-field (near Hanover) where I was further briefed by Major Ignatieff (Local CIOs Group Leader).

From Wunstorf-Luneburg (150 miles, 3/4 hour) Surgeon Capt. Fairley, R.N. and I travelled on alone by the same plane, leaving the remainder of the party at Wunstorf.

From Luneburg-Winsun (T Force HQ) (15 miles) we travelled by car.

At Winsun, which showed no obvious sign of bomb damage, we contacted Major Paterson (T Force) who arranged our onward transport and return journey. I also met my co-investigator, Dr. Rice, an American with considerable experience as a malarialogist in S.E. Europe, and Capt. Krausen, a U.S.A. CIOs assessor.

We then drove from Winsun-Hamburg (15 miles) by car, passing large numbers of D.P. (displaced personnel) slowly, and it would appear aimlessly, making their way along the high-road by every manner of slow locomotion, lorries with or without trailers, farm carts, hand-carts, bicycles, on foot, in each case loaded "to the plimsoil mark" with every description of household goods and chattels. Although the majority of this roving population were shabby and ill-dressed, most of them appeared warmly clad and I noticed (very superficially) no evidence of mal-nutrition.

Our drive into Hamburg was necessarily slow as the road surface was bad and very uneven due in large part to inadequately filled-in shell craters and, as we approached Harburg, the cobbling of the road.

From Luneburg to Harburg we had seen little evidence of bomb damage but from Harburg onward into Hamburg we saw increasing evidence of destruction until, in Hamburg itself the devastation can only be described as terrific and terrifying. Over large areas, many miles in extent, and stretching on either side of the road as far as the eye could see one passed little but huge piles of rubble and twisted girders with here and there a wall, a tower, or perchance an isolated building. In spite of this almost universal destruction we were surprised to note that the great steel bridges over the Elbe connecting Hamburg with its suburb Harburg were intact and serviceable.

Having secured our billeting tickets (Imk. 6d. a day) we were billeted at the Streits hotel, on the Binnen Alster. It is noteworthy that the busy shopping and business area in the immediate vicinity of the Binnen Alster, which also includes the two large hotels, the Atlantic and Streits, is one of the few comparative oases in a vast desert of destruction.

We lived entirely on British rations well cooked by German cooks and were well waited on by German Waiters. Spirits were unobtainable, except possibly "under the counter" but larger beer at

25 Pfs = 1¹/₂d., and excellent white Rhine wine at 1 Mk. a glass were plentiful. My bedroom was roomy and comfortable with its own bathroom, W.C., and inevitable "bidet". There was no hot water laid on - a minor inconvenience.

On the following morning (Wednesday, June 6th.) I interrogated my first "target", Dr. Habs, Director of Public Health, at the Hygiene Institute of Hamburg, now largely taken over by a British medical unit, leaving the Germans to occupy the basement.

Although obviously and over-anxious to "come clean" or appear to do so, Dr. Habs appeared constantly on the defensive, was obviously ill at ease, and appeared to be constantly "looking over his shoulder". (It is possible that language difficulties accentuated this impression).

It was suggested, I don't know with what truth, that Dr. Habs was at one time engaged on research in biological warfare, and possibly experimented on unwilling "volunteers". I decided not to question him on this subject of which I know nothing and which was entirely outside my terms of reference, thinking that by so-doing I might be doing more harm than good and might also very probably "foul the nest" of some future investigator more competent to deal with this aspect than I.

Although Dr. Habs had acted as malariologist in Greece and elsewhere to the German Wehrmacht he had nothing of importance to impart. We learned that Gesserol-(DDT) had been used successfully by the Wehrmacht since 1942 as a lousicide and since 1943 in malaria prevention. Excellent results had been obtained in the prevention of pappataci (sandfly) fever by impregnating mosquito nets with a solution of DDT. (Appendix A refers).

We next called on Professor Nauck, Director of the Bernard Nocht Institute fur Schiffs und Tropenkrankheiten (Appendix B), at present housed in a temporary building at 207 Hammerland Strasse, one of the few remaining houses in a thoroughly devastated area.

He was much more forthcoming, speaks English well, and gave us every assistance, accompanying us as guide and interpreter to many of our "targets" in Hamburg.

He explained that the Bernard Nocht Institute overlooking the dock area had been badly damaged during the great raids of 1942/43, since when it had carried on in four widely separated buildings.

He estimated that 50 per cent of the buildings of Hamburg had been demolished and that 40,000 - 60,000 individuals had lost their lives as a result of the air raids, very many of them still lying under the piles of debris.

Dr. Nauck, whose chief interest lies in typhus and rickettsial research, had little of interest to tell us. He indicated that conditions, moral and physical, in Hamburg during the past few years

have not been conducive to that detached frame of mind essential to the successful prosecution of detailed research nor have facilities been readily available.

He confirmed that no rear advance had been made in Germany either in the suppression or treatment of malaria, quinine, atebrin and plasmoquine remaining their sheet anchors.

Yatren by mouth and rectally is used in the routine treatment of amoebic dysentery, emetine being reserved for hepatic complications.

Combined treatment with bacteriophage and eubasin (sulphapyridine) had given good results in bacillary dysentery.

No advance had been made in the chemotherapy of typhus, chief reliance being made on an effective vaccine.

We also met at the Institute Dr. Vogel, a helminthologist, who showed us his collection of bilharzial snails kept alive with difficulty during the blitz, and Dr. Kessering, also a parasito-logist and late of Shanghai. (Appendix B).

After lunch we visited the large Ennendorfer Hospital, a civilian institution of 1,500 beds, and interviewed Dr. R. Degkwitz (Appendix C), a pediatrician.

He declared himself to be violently anti-nazi and stated that he and his two sons had spent two years in a Nazi concentration camp and had only recently been released.

This target, i.e. the investigation of Dr. Degkwitz's theory of a new therapeutic approach by what he calls "aimed injection", had been entrusted to S/Capt. Fairley. R.N., and I was merely an interested spectator.

Dr. Degkwitz illustrated his argument by some interesting motion pictures taken with the ultra-microscope.

I am not competent to discuss the merits of his "aimed injection" hypothesis. There appeared nothing inherently impossible or impossibly far fetched in the idea and his argument was at least plausible. (Appendix C).

The following morning (Thursday, June 7th.) we visited the large 1,500 bedded hospital (formerly a mental hospital) at Langerhorn, 15 Km. from Hamburg, where is lodged temporarily yet another section of the Hamburg Institute of Tropical Medicine (200 beds and research laboratories).

We first interrogated Dr. W. Weiss, chief of the Dept. of clinical chemistry (Appendix D).

He has devised a method for the estimation of the atebrin concentration of the blood by a fluorometric method which he claims is accurate to plus or minus 50 gamma (Dr. Rice took particulars of this).

Weisse has also developed a nephelometric method for the estimation of santochin in the body fluids.

Santochin is a new therapeutic agent in malaria which consists of a quinoline base with atebrin side chain; its action and limitations closely resemble those of atebrin. This drug has been the subject of detailed research in America.

Dr. Mohr (Director of Clinical Medicine) demonstrated modern German therapeutic methods in the wards devoted to tropical medicine.

We saw cases of relapsing malaria treated with:-

1. Quinoplasmine which Dr. Mohr considers superior to atebrin.
2. Atebrin mesonate by I.M. injection (.3 G) for two days, followed by atebrin by mouth.
3. Atape (tabs. containing .1 G atebrin, .005 G plasmoquine).
4. Atebrin .3 G, plasmoquine .01 G given simultaneously by I.M. injection for two days, followed by seven day course of atebrin.

Dr. Mohr has seen no bad results following the simultaneous exhibition of atebrin and plasmoquine, nor has he or Dr. Nauck seen cases of clinical BWF following plasmoquine, but Dr. Nauck had heard of it. Dr. Nauck does not agree with Dr. Mohr that atebrin and plasmoquine are given together with safety.

Dr. Mohr had used chlorine substituted yatren in a few cases of amoebic dysentery but preferred the original iodine compound which is better tolerated.

He had also used concentrated solustibosan in a few cases of Kala azar and found it superior to the original preparation.

We were shewn cases of trench (wolhynian) fever from the Russian front; no successful therapy for this disease had yet been evolved. One patient had had febrile bouts for over a year. Dr. Nauck and his colleagues had successfully transmitted the disease to lice and had further transmitted it to a few paralytics. We were shown good microscopic slides of louse guts showing the extracellular (R. quintana) and intracellular (R. prowazekii) rickettsiae.

Dr. Mohr then demonstrated 20 cases of typhus, now convalescent, from a Hamburg camp. Although the whole camp was protected by

typhus vaccination five, all over fifty, had died. Dr. Mohr has found the Weil-Felix reaction of diagnostic value from the fifth or sixth days. In this series titres of 1/200-1/6, 500 were encountered. No hospital infections took place; this he attributes to careful delousing and the use of gesserol (DDT).

We also met Dr. Lippelt, chief of the Bacteriology Dept. and Dr. Weyer, entomologist. (Appendix D).

On the morning of Friday, June 8th. we again set out, accompanied by Dr. Nauck as cicerone.

We first visited the much bombed and damaged Bernard Nocht Institute fur Schiffs und Tropenkrankheiten. This remarkably compact and comprehensive series of buildings occupies a commanding site overlooking the docks and harbour and must have been, before disaster overtook it, admirably suited to its purpose. The only portion at present functioning is the attached hospital of 100 beds which has largely escaped damage.

We were shown the shells of the laboratories where ^Giemsa, Muhlens, Fulleborn and Nocht carried out their investigations, the library, relatively little damaged, and the large lecture theatre which is almost intact. The fine animal house in the grounds has been largely demolished. The hospital of 100 beds was still functioning under the clinical directorship of Dr. Mohr. Other than tropical cases are now treated there.

Dr. Nauck is extremely anxious that this most essential institute should function on its original site as soon as possible. Whether the present shell can be usefully repaired or whether it would be more economical to pull it all down and build a fresh I am not competent to offer an opinion. I recommend, however, that this fine institute of such proven worth be given a high priority in any reconstruction scheme. The staff are at present working under manifest difficulties in four widely separated buildings with poor inter-communications. Effective work, especially of a research type, is almost impossible under such conditions.

We finished an interesting but somewhat exhausting morning with a visit to one of the monstrous flak towers cum air raid shelters, of which there are four in Hamburg, paired on either bank of the Elbe. These huge black monstrosities gave apparently effective shelter to some 80, 000 people during the raids.

They are extremely ugly and are a grim but efficient monument to German thoroughness and, in my opinion, epitomise the character of at least the Nazi section of the German public - ugly but efficient.

These immensely strong and solid edifices which took upwards of a year to build have apparently achieved their purpose, at least as air raid shelters, since none of them appear to have suffered more than superficial damage although they must have been hit many times.

The conception of a combined flak tower, air raid shelter, and hospital is, I think, peculiarly German and I doubt if such a combination would be tolerated in this country.

The tower we visited is, I believe, the sole one with a properly equipped hospital contained within it although I presume that the others have some sort of elaborate M.I. room or C.R.S. wherein to treat the sick and injured amongst their 20,000 temporary "guests". I was told that these air raid shelters were raised above the ground instead of below it because the high surface level of water in the greater part of Hamburg makes large underground shelters difficult or impossible to construct. I am unable to confirm if this is the correct explanation but I noticed several underground shelters in other parts of the town. We were told that the temporary inmates had to leave the towers and disperse to their homes immediately the all-clear sounded. (Appendix E).

Whilst in Hamburg I took the opportunity to visit some of the few departmental stores and shops which had escaped the blitz. There was practically nothing to be had except cheap and rubbishy "ersatz" articles. They have, as in this country, an "under the counter" mechanism, for, after a little encouragement I was shown trays of articles of considerably better quality than those exhibited for sale. I noticed that when these appeared a crowd quickly collected but usually had no luck. The streets were full of hurrying pedestrians as were the trams during the day but were very empty at night. Where all the people that crowded the streets and trams during the day disappeared to at night or where they slept I do not know, probably in the suburbs, many of which, especially those furthest from the centre of the town, appearing little damaged.

I paid a short visit to the Hagenbek zoo in the Tier Garten. Although many of the buildings and animal houses had received hits a number of animals, mostly in good condition, remain. I noticed that while there was a wide selection of ruminants and other vegetarian animals including such large varieties as giraffes (fine specimens), bison, and elephants, the latter still occupying their extensive "Mappin Terrace", but few flesh eating species were seen although I saw a couple of fine half-grown lion cubs. I noted in the centre of the garden a rather charming little Japanese section complete with "Torii" gate, red lacquer bridge, stone lanterns, etc., strangely reminiscent of Nikko. It would be interesting to know when this particular section was added.

Whilst the majority of civilian pedestrians appeared quite inoffensive and were mostly somewhat shabbily dressed, carrying old and battered brief cases, handbags, etc., I noticed a few rather arrogant looking women well and expensively dressed in what I imagined to be the height of fashion.

By the insolent and scarcely disguised look of disgust on their faces whenever they passed an allied soldier I gathered that they were anything but repentant and were probably married to or closely associated with prominent nazi officials or army officers.

In conclusion I should like to pay tribute to the great courtesy and help I received whilst in Germany, from the officials of CIOGS and T Force (which attends to the creature comforts of CIOGS), from the Town Major's staff at Hamburg, and finally from my Co-investigator, Dr. nice, and another American investigator who worked with us, Mr. Hall, an American research chemist interested in insecticides.

Without the help of these two highly competent and charming American colleagues who fixed up most of my contacts, accompanied me on my visits, took shorthand notes during the interrogations, and subsequently typed them in longhand to form the basis of the appendices accompanying this report, I should have accomplished little.

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APPENDIX A.

Interrogation of:

Professor Habs, Director of the Institute of Hygiene of Hamburg, 17 Gorch Fock Wall. June 6th., 1945.

Malaria.

Dr. Habs worked in Greece during the war in the Wehrmacht. Duties concerned Anopheles control and study of species and varieties (special maps accompany), breeding places, malaria prevention, etc. Was not concerned with therapeutic aspects. He used atebrin prophylaxis, .06 G. daily. He found that daily administration was easier in the army than twice weekly. Atebrin prophylaxis commenced three days before troops entered malarious area. He found that quinine and atebrin were equally effective as prophylactics. He had seen no blackwater fever or gastro-intestinal upsets following plasmoquine. The therapeutic dose of atebrin was 0.3 G. daily for seven days followed by plasmoquine 0.02 G. daily for 3 days. Habs believes that atebrin and plasmoquine should not be given concurrently. Prof. Hauer in Berlin reports good results from their combined used.

A. elutus breeds along coast of Greece; A. superpictus in mountain streams.

Dr. Habs believes that atebrin by mouth is satisfactory for benign tertian malaria. For Falciparum malaria he recommends atebrin musonate .3 - 0.6 G. intramuscularly daily for 2 - 3 days followed by oral administration. Same treatment for cerebral malaria.

He used Paris green for Anopheline control. DDT has been used with good results in Anopheline control since 1943. DDT was first used as a lousicide in 1942, by the Wehrmacht in Russia. He has noticed that the Gambusia (originally placed there by Dr. Rice) are working well in Macedonia.

Kala azar.

Dr. Habs saw only seven cases, all from Greece and Crete. Solustibosan (concentrated) was used with good effect. Drug was well tolerated but cases too few to judge effectiveness. Has not used stilbamidine.

Bacillary Dysentery.

Dr. Habs considers eubasin (sulphapyridine) highly effective.

Amoebic Dysentery

Emetine and yatren chiefly used. Neither carbarsone nor gavano nor chlorine substituted yatren used.

Pappataci Fever.

Excellent results in prophylaxis by impregnating mosquito nets with DDT. No effective treatment evolved.

APPENDIX B.

Interrogation of:

Professor Nauck, Director of Hamburg Tropical Institute
(Bernard Nocht Institute fur Schiffs und Tropenkrankheiten)
June 6th, 1945.

Malaria.

No real advance over atebrin and plasmoquine has been made in the prophylaxis or treatment of malaria. Tertian relapses can be somewhat reduced by a 6 day atebrin course followed by a 3 day plasmoquine course; many relapses under this treatment, however. He considers that atebrin prophylaxis (.06 G. daily) cuts down the incidence of clinical malaria but many cases break through.

Amoebic
Dysentery.

Yatren orally and by enema recommended for intestinal lesions. Emetine reserved for hepatic amoebiasis. Carbarsone has been tried but Dr. Nauck does not like it.

Typhus.

Dr. Nauck's special subject. No real advance in chemotherapy. Chief reliance on an effective vaccine.

Bacillary
Dysentery.

Combined treatment with bacteriophage and eubasin has given good results.

Trench
Fever

Uses xenodiagnosis. Lice are fed repeatedly on suspected patients (5 - 6 days); the stools of the lice are then examined microscopically. He considers the method reliable. Is positive even during remissions. The Weil-Felix reaction is negative in Trench Fever.

Tropical
Ulcer.

Marfanil (10%) and sulphanileamide (90%) applied topically have given good results.

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APPENDIX C.

Interrogation of:

Dr. Rudolf Degkwitz, a pediatrician at Eppendorfer Hospital in Hamburg.

Scheme of "aimed injections" explained as follows:-

Intracellular fibres are crystalline in structure.

Ordinarily crystals are formed in pure solution. However, many other substances are present in protoplasm. Degkwitz thought, therefore, that there must be substances in protoplasm which promote crystallization. He studied protoplasm and found these substances to be lipoids, soaps, lecithin and phosphatids. Albumin, glycogen and certain colloidal substances prevent or stop crystallization. Degkwitz then theorized that size of crystals could be controlled by altering the balance in the solution between crystal-promoting substances and crystal-preventing substances. He is able to make crystals of any desired size by stopping crystallization at the right point with his antagonists.

There are two general forms of crystals, i.e. spherical and needle-like. All the above applies only to substances which are insoluble in water, but soluble in fats. Spherical crystals pass through capillaries more readily than needle-like crystals. According to Degkwitz, crystals injected intravenously are filtered out of circulation by lung, liver, spleen and bone marrow. In the lung the mechanism appears to be only mechanical. In the liver, spleen, and bone marrow, endothelial cells also play a part. Large crystals injected intravenously are filtered out by lung capillaries. Slightly smaller crystals will pass through the lung and be filtered out by the liver. Still smaller crystals pass through both lung and liver and are filtered out by the spleen. Smaller crystals than these pass through lung, liver and spleen and are taken out by the bone marrow. In this way he believes it possible to concentrate drugs in any of these four organs. Inasmuch as the preparations which he works with are fat-soluble they diffuse into the fat-containing protoplasm of the organs in which they are held, and, therefore, may produce a therapeutic effect, provided the substance used is a chemotherapeutic agent. This work and the technique of making these crystals has been described in several publications:

Kolloid Zeitschrift Vol. 78 No. 3 (1937) (?)

Fortschritte Auf Den Gebiete Der Rontgenstrahlen

Vol. 58 No. 5 (1938) (Reprint accompanying).

"Hepatoliographie mit Jodsal" by Franz Beckermann

Georg Thieme, Leipzig. (1940).

Degkwitz released from a concentration camp for alleged anti-Nazi activities 2 months prior to interview. He was in the concentration camp for 2 years. Just before being imprisoned he had been working on preparation for treating T.B. No publications, no human test. Did a few experiments on tuberculin infections of bovine and human-types in guinea pigs. Notebooks lost during imprisonment. Substance described as Sudan-Red or a B-naphthol derivative, used successfully for tbc. therapy. All inoculated guinea pigs died in about 2 months if untreated. In treated animals injections started 2 weeks after and kept up for 4 to 8 weeks. In adequately treated animals no death from T.B. After 3 or 4 months animals killed and no tubercles found. His chemist will give us exact formula of compound used and a brief method of preparation. (This was handed to Dr. Rice and, presumably, is incorporated in Surgeon,/ Captain Fairley's report). Degkwitz claims to have worked in the Hygienic Laboratory USPHS in Washington DC and knows Drs. Harrison, Armstrong, McCoy and Dyer.

Degkwitz showed us motion pictures of various crystalline forms of cholesterol, spheres of various sizes and needles. Photos taken by ultra-microscope. Also showed Sudan-Blue of one-size crystal injected intravenously all concentrated in lung. Same substance in smaller crystals all concentrated in liver.

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APPENDIX D.

Visit to Hamburg Institute of Tropical Medicine,
Langenhorn Hospital, June 7th., 1945.

Interrogations:

Dr. Weise, Chief of Dept. of Clinical Chemistry.

Atebrin.

Weise has devised a method for the determination of the atebrin concentration in the blood, urine and stools based on fluorometric analysis. He claims the method is accurate to plus or minus 50 gamma in clinical work. Dr. Weise has checked the atebrin blood level using different methods of atebrin prophylaxis. He found that there are no differences in blood level whether the drug is given daily or bi-weekly as long as the total weekly amount remains constant. This remains true after two or three weeks of atebrin administration. Weise considers that as far as therapeutic efficiency and blood concentration are concerned there is no difference between atebrin given twice weekly or daily, but from the military standpoint it is easier to administer a drug daily than bi-weekly.

Although not a clinician Dr. Weise has never observed psychoses or other toxic effects from atebrin administration. He believes there is true elimination of atebrin by the bowel, based on the following observations; when atebrin is administered orally more of the drug is excreted in the faeces than in the urine; when atebrin is administered intramuscularly about equal quantities are excreted in the faeces and urine.

Santochin.

Dr. Weise has devised a nephelometric method for the determination of santochin in body fluids. Santochin is more slowly eliminated from the body than quinine but more rapidly than plasmoquine. A transcript of the method was obtained from Dr. Weise. (This is included in Dr. Rice's report).

Plasmoquine.

Questioned concerning the toxicity of plasmoquine Dr. Weise said that the methaemoglobin produced by plasmoquine is reversible whereas the methaemoglobin produced during the course of blackwater fever is irreversible.

Dr. Mohr, Director of Clinical Medicine, Institute of Tropical Medicine.

Malaria.

In B.T. malaria the earliest relapses occur 24 - 28 days after the end of treatment with both atebrin and santochin, but the number of such relapses is slightly less after santochin. Santochin is given in double the atebrin dosage, i.e. 0.6 G. daily for 5 - 7 days, and is better tolerated than atebrin. Mild gastro-intestinal symptoms occur in 1% - 2% of cases treated with santochin.

For relapsing B.T. malaria Dr. Mohr prefers quinoplasmine to atebrin. Dose 3 tabs daily for 21 days. He demonstrated a patient who had had seven relapses so treated; also a case of M.T. malaria treated by atebrin mesonate 0.3. G. daily by intramuscular injection for two days, followed by oral atebrin 0.3. G. daily for seven days.

He demonstrated another case of severe Falciparum malaria treated by tabs. of atape (1 tab. contains atebrin 0.1 G. plasmoquine 0.005 G.) three tabs. daily for 5 - 7 days. He believes that the combination of atebrin and plasmoquine reduces the relapse rate.

Another severe case of B.T. malaria was demonstrated treated by atebrin 0.3 G. and plasmoquine 0.01 G. injected together intramuscularly daily for three days followed by the usual course of atebrin by mouth.

Dr. Mohr does the sedimentation rate on all serious cases of malaria; he believes that if the E.S.R. is high during remission that a relapse is likely.

Other treatment of malaria consists of reduced iron and vitamin C.

Amoebic Dysentery

Dr. Mohr has used the I.G. Farben chlorine substituted yatren in a few cases. He finds it less effective and less well tolerated than ordinary yatren.

Yatren is given in doses of 1, 2, 3 Gms. in 500 cc water by enema, for intestinal lesions; emetine is reserved for liver lesions.

Kala Azar.

Dr. Mohr has used solustibosan (concentrated) in several cases. He considers it superior to old solustibosan. Intramuscular injections are less painful and the preparation is more effective in doses containing an equivalent amount of antimony. He has given two five day courses in three weeks. He starts with 0.5 cc and works up to 2.0 cc. He has also given 1 cc every 12 hours for six days. He believes it advisable to give a repeat course of solustibosan, in 5 cc doses on alternate days for two weeks, six months after the primary course.

Trench Fever.

He has used 386 B. in a few cases of leishmaniasis and septic conditions. He is not enthusiastic about it.

(Wolhynian Fever). 3 methods of treatment used:- Eubasin, convalescent blood, artificial fever produced by ommadin or by intravenous injections of killed bacteria.

One patient (seen) has had recurrent bouts of fever since April, 1943; pain along shins the only symptom; there was no headache, no loss of appetite; liver and spleen were not enlarged.

Method of "xenodiagnosis" used. Technique:- five or six lice are fed daily on the patient for 6 - 7 days. Stools of lice are then examined daily for rickettsiae. Seven days after the last feeding the lice are sectioned and the guts examined for rickettsiae. If trench fever is present extra-cellular rickettsiae are seen; if typhus, the rickettsiae are intracellular. (Slides demonstrating these differences were shown us).

He has also checked diagnosis by transmitting the disease to paralytics. The guts of the lice are emulsified and injected subcutaneously.

(Dr. Nauck is responsible for most of this work).

Typhus Fever.

Twenty convalescent cases of typhus acquired in a Wermacht camp in Hamburg were demonstrated. All 20 had been previously vaccinated. 5 of the original 25 had died. The fatal cases were all over 50. All ran a typical course. Weil-Felix reaction was positive in dilutions of 1/200 - 1/6, 500. Dr. Mohr believes that a diagnosis is possible by the Weil-Felix test from the 5th. - 6th. days onward.

There have been no cross-infections in hospital. Dr. Mohr puts this down largely to the efficacy of DDT.

Dr. Lippelt. Chief of Bacteriology Dept.

Dr. Lippelt was in Afrikacorps during the African campaign. He saw 150 cases of relapsing fever. He considers the cases were probably tick-borne rather than louse-borne as there was no epidemic.

Dr. "eyer, Entomologist.

He demonstrated method of rearing and feeding lice and discussed xenodiagnosis. He also demonstrated various types of Rickettsiae.

Dr. Scheer, assistant to Dr. Mohr, and Dr. Loos of the Pathology Dept., took minor parts in the discussion.

Dr. Nauck, Director of the Institute, accompanied us throughout our visits to the buildings of the Institute and helped by acting as interpreter during the interrogations. He did all he could to facilitate our investigations.

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APPENDIX E.

Notes on Flak-Sturm, Hamburg.

There are four of these enormous combined air-raid shelters and Flak towers, two pairs on either side of the Elbe. The shelters were built in 1943, following the big air raids on Hamburg, and took a year to construct. The one visited is of massive construction, of circular groundplan, covering an area of 2,700 square metres and 150 ft. high. There are 5 stories.

The construction throughout is of reinforced concrete; the roof is 4.8 metres thick; the ceiling between 4th. and 5th. floors 4 metres thick; remainder 2 metres thick. The outside is painted black. All entrances have air-tight (rubber lined) steel doors and the only other apertures are the small outlets for the numerous ventilating shafts.

There is accommodation for 17,000 people (23,000 crowded in during raids) in numerous medium sized rooms, (one we saw was 20' x 12') on four of the five floors. On each floor there are washing basins and well fitted water closets. Directly the alert sounds people throng into the shelter, each street or district being allotted certain specified rooms (details on room doors). The people remain seated on benches until the all clear sounds and then have to leave. Each floor has a large air extraction, ventilating and air-conditioning plant.

The second floor is occupied by a well-planned hospital of 106 beds (good steel hospital beds); there are three well equipped operating theatres (two for clean cases; one for dirty cases) and a very excellent cystoscopy theatre. The theatres are provided each with two large shadowless lamps and operating tables. The lighting is from the main town supply alternatively from a dynamo driven by a diesel engine in the basement. The theatres and all other rooms and corridors are painted white and surrounding each theatre and running along the corridors at head height is a strip of phosphorescent paint about 2 ft. wide. In the event of light completely failing one can see sufficiently to get about by this means. There is a first class radiological outfit. The hospital is administered by the Harbour Hospital staff (damaged and not working). The director is Dr. Brutte (also director of the Harbour Hospital); a brain surgeon, with two assistant M.O.s. In the event of a raid two more M.O.s. assist. There are about 50 nurses, ten of which are resident.

Along the corridors are numerous valuable oil paintings removed for safety from the art galleries of Hamburg.

There is a large lift which operates from the ground floor to the top of the building.

On the roof are 4 twin 12.8 cm. A.A. guns and numerous 2 cm. guns. The heavy guns are raised on special mountings.

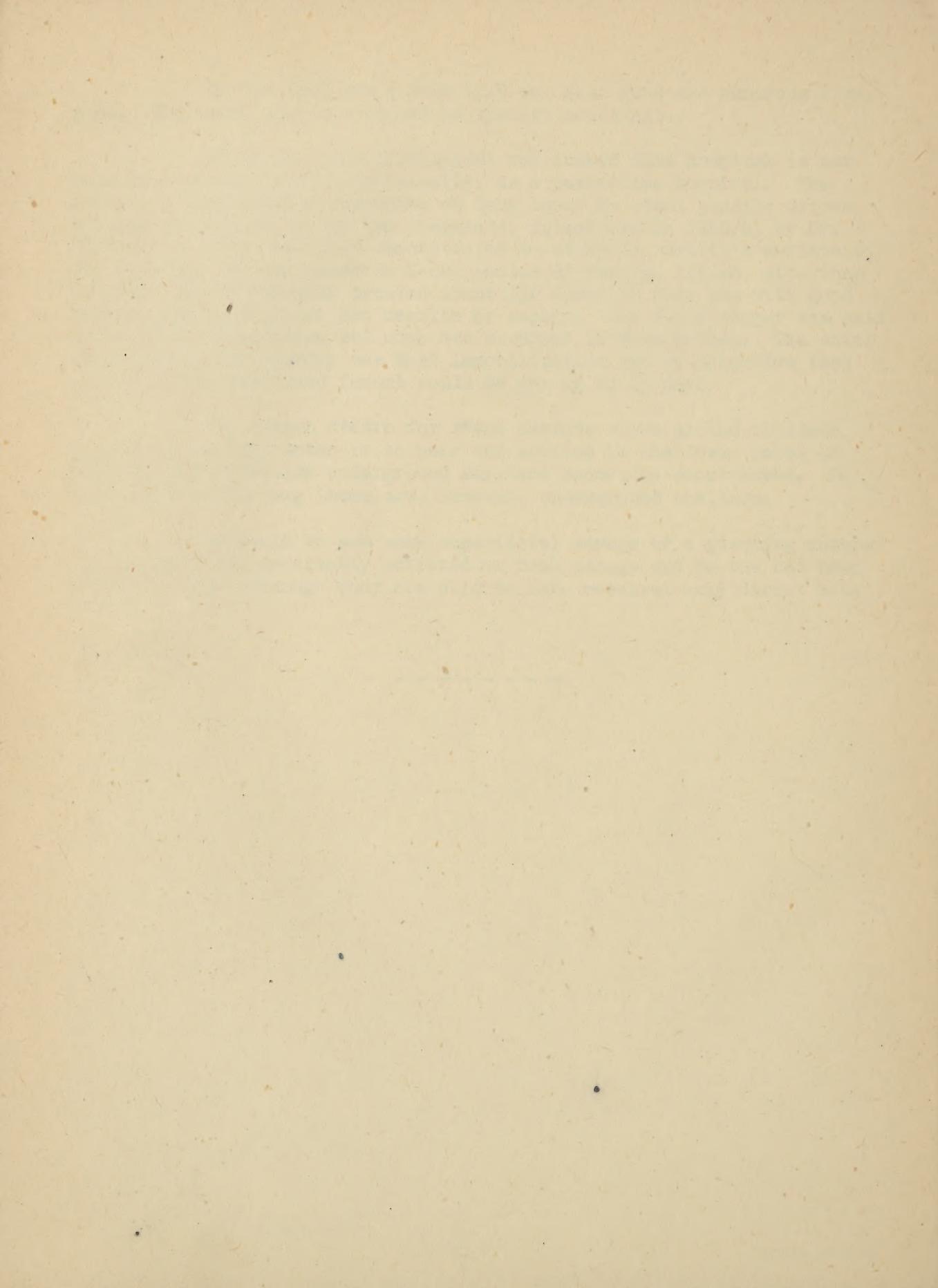
Since the Harbour Hospital was bombed this hospital is now working, apparently most efficiently, as a peace-time hospital. The method of immobilising fractures of long bones by steel pencils driven through the marrow of the two fragments, introduced in 1940/41 by Dr. Kuntcher of Kiel, was then demonstrated to us by Dr. Brutte's assistant, Dr. Schroer. We saw numerous X-ray photos of femurs, tibiae, etc. thus treated. He had himself treated about 150 cases in this way with good result. He had seen no bad results or sepsis. The chief danger was said to be from fat embolism but none had occurred in this series. The chief advantage in his opinion was that immobilisation was so effective that patients with fractured femurs could be got up in 15 days.

The raison d'etre for these massive above ground shelters appears to be that water is so near the surface in the lower parts of Hamburg that effective underground shelters cannot be constructed. In many parts of Hamburg there are, however, underground shelters.

Although we saw some superficial damage of a glancing nature the shelters had apparently suffered no real damage and no one had been killed in them although they are said to have received many direct hits

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